

REMARKS

Reconsideration of the application is requested in view of the amendments to the claims and the remarks presented herein.

The claims in the application are claims 2 and 5 to 7, all other claims having been cancelled.

Claims 2, 5 and 9 stand rejected under 35 USC 103 as being obvious over EP 0612578 or Japan 2000141078 and claims 6 and 7 were rejected over the said art taken in view of the prior art admission. The Examiner states that EP 0612578 discloses a Sn-Ag-Zn-In composition and the Japanese reference discloses a SN-Ag-Zn-In solder. The Examiner deems the references teach the claimed solders and that Table 5 fails to show criticality of the claimed composition and there is no showing that the reference composition do not have the same properties.

Applicants respectfully traverse these grounds of rejection since they do not teach Applicants' 4 component, lead-free solder. The present invention is a lead-free solder which contains 3 to 3.5 weight% of Ag, 0.3 to 1.0 weight% of Zn, 8.0 to 10.0 weight % of In and the remainder being Sn and which is a Sn-Ag-Zn-In-based lead-free solder that does not contain any components other than the 4 specific components. Thus, the present invention makes it possible to develop a particular operational effect in which the connecting strength is not deteriorated even when In is contained in 8.0 to 10.0 weight%.

In contrast, EP 0612578 discloses a lead-free solder which is formed of 0.2 to 6.0 weight% of Zn, 1.0 to 6.0 % of Ag and a remainder being Sn and which can contain 0.2 to 6.0 weight% of In. That is, the lead-free solder disclosed in EP 0612578 is merely a Sn-Ag-Zn-based lead-free solder which can contain only 6.0 weight% or less of In.

JP 200141078 discloses a lead-free solder which is formed of 0.01 to 3.0 weight% of Al, 0.1 to 50.0 weight% of In, 0.1 to 6.0 weight% of Ag and the remainder of Sn and which can contain 0.01 to 7.0 weight% of Zn. That is, the lead-free solder disclosed in JP 200141078 is a Sn-Ag-Al-In-based lead-free solder that always contains Al which is lacking in Applicants'solder.

JP 2001334384 discloses a lead-free solder which is formed of 0.01 to 0.5 weight% of Ni, 2.0 to 5.0 weight% of Cu and the remainder being Sn and which can contain 0.01 to 3.5 weight% of Ag, 0.01 to 9.0 weight% of Zn and 0.01 to 10.0 weight% of In. That is, the lead-free solder disclosed in JP 2001334384 is a Sn-Cu-Ni-based lead-free solder that always contains Ni and Cu which are not in Applicants'solder.

As described above, EP 0612578 in which the Sn-Ag-Zn-based lead-free solder capable of containing only 6.0 weight% or less of In is disclosed, JP 2000141078 in which only the Sn-Ag-Al-In-based lead-free solder always containing Al is disclosed and JP 2001334384 in which only the Sn-Cu-Ni-based lead-free solder always containing Ni and Cu is disclosed, are completely different from one another in terms of the bases thereof. For this reason, combining the above solder components is in itself not possible. Moreover, it is not possible to concieve

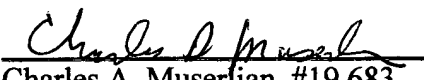
that the above-described composition of the present invention can be easily obtained even if the inventions described in these documents are combined.

It is because the Examiner has already known the above-described composition of the present invention that the Examiner has determined the composition of the present invention as being obvious. Specifically, with the prior knowledge of the composition of the present invention, the Examiner has made the above determination by forcibly combining the descriptions in the above documents conveniently so as to obtain the above-described composition of the present invention, even though the documents each describe compositions of completely different bases.

Accordingly, it is not at all conceivable that the present invention is obvious from the descriptions in the above documents not only presenting the compositions of completely different bases, but also not suggesting composition percentages of the solder of the present invention. Therefore, withdrawal of these rejections is requested.

In view of the amendments to the claims and the above remarks, it is believed that the claims point out Applicants' patentable contribution. Therefore, favorable reconsideration of the application is requested.

Respectfully submitted,
Hedman and Costigan


Charles A. Muserlian #19,683
Attorney for Applicants
Tel. 212 302 8989

CAM:mlp
Enclosures